REMARKS

Claims 1-7, and 9-23 are pending in the application. Independent claim 1 is amended to include features of dependent claim 8; accordingly, claim 8 is cancelled. Minor amendments are made to the specification in paragraphs [0002], [0048], and [0097] and to claims 1-3, 5, 11, 13, and 14 to correct various minor errors (Paragraph numbering is according to the present application published as 2005/0182169 dated Aug. 18, 2005). The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

ELECTION/RESTRICTION

Applicants affirm the provisional election made with traverse of the invention of Group I, claims 1-20.

Traverse of the election/restriction is based on the absence of a serious burden on the Examiner in prosecuting the claims of Groups I-IV. These claims are related and connected by the claimed aqueous dispersion and include processes for preparing and methods of applying the aqueous dispersion.

Moreover, the present claims embody a single, general inventive concept and hence meet the requirement under PCT Rule 13.1 for unity of invention. Also, under PCT Rule 13.2, there is a technical relationship among the claims involving one or more of the same or corresponding special technical features, namely the aqueous dispersion in the present case. The expression "special technical feature" means a technical feature that defines a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. Thus, in this case, the claimed aqueous dispersion is

related in all the claims and corresponds to a "special technical feature." This feature is judged for *unity* under 13.2, it is *not* judged regarding *patentability* in view of the Examiner's allegations of anticipation or obviousness in view of U.S. 6,599,631.

As patent ability is not the proper test, Applicants respect fully assert the restriction requirement should be withdrawn.

SPECIFICATION

Paragraphs [0002], [0048], and [0097] (numbering according to published application 2005/0182169 dated Aug. 18, 2005) are amended to correct typographical errors. The indicia "M" is added to formula (I) in Paragraph [0002]; support is found in paragraphs [0007] and [0076]. Paragraph [0048] is amended to replace "wetting" with "crosslinking" to describe the agent; support is found in paragraphs [0127]-[0132] and claim 1. Finally, paragraph [0097] is amended to replace "III" with "IV," referencing the formula presented in preceding paragraph [0096].

REJECTION UNDER 35 U.S.C. § 102

Claims 1 and 3-20 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Kambe et al. (U.S. Pat. No. 6,599,631). This rejection is respectfully traversed.

The present invention as embodied in independent claim 1 is drawn to an aqueous dispersion with a pH of from 2 to 7 that includes at least one swellable polymer and/or oligomer containing at least one functional group that is at least one of an anionic functional group, a potentially anionic functional group, and/or a nonionic hydrophilic functional group. The dispersion also includes surface-modified, cationically stabilized,

inorganic nanoparticles of at least one kind, wherein the nanoparticles are modified using a compound of formula (I); at least one compound selected from the group consisting of amphiphiles and organic compounds which are capable of forming chelate ligands; and at least one crosslinking agent. Claim 1 is not anticipated by Kambe as the reference fails to teach a dispersion having surface-modified, cationically stabilized, inorganic nanoparticles that are modified using a compound of formula (I) in addition to a crosslinking agent. In addition, Kambe fails to teach a polymer (A) separate from the nanoparticles (B).

Kambe is provided for teaching an inorganic particle/polymer composite. Kambe abstract. The composite is generally formed by chemically bonding a linker compound with an inorganic nanoparticle and a monomer/polymer unit, or by directly bonding the inorganic nanoparticle and the polymer. Kambe col. 4, lines 58-62. Linker compounds have two or more functional groups, where one functional group covalently bonds with a terminal group of the polymer and another functional group chemically bonds with the inorganic particle. Chemical bonding includes bonding with some covalent character with or without polar bonding and can have properties of ligand-metal bonding along with ionic bonding. Kambe col. 5, lines 32-45; col. 12, line 48 to col. 14, line 43. The inorganic particles include metal or metalloids that are modified by chemical bonding to one or more of the linker compounds. Kambe col. 6, lines 28-31; col. 14, line 44 to col. 18, line 63. The linker compounds act to modify/functionalize the surface of the inorganic particles. Kambe col. 6, lines 33-35. The linker compounds are also bonded to the polymer, thereby joining the polymer with the inorganic compound. Kambe col. 7, lines 44-45, 54-57; col. 11, line 47 to col. 12, line 47. Thus, a composite is formed that

has stably integrated inorganic particles well dispersed throughout the polymer/composite structure. Kambe col. 8, lines 22-26; FIGS. 1-9; col. 21, lines 21-67. Additives include surfactants, buffers, and salts. Kambe col. 19, lines 59-60.

As such, the Kambe inorganic particle has its surface modified by the linker compound which covalently bonds it to the polymer. Kambe col. 6, lines 33-35. Kambe does not teach a dispersion having a surface-modified, cationically stabilized, inorganic nanoparticle, wherein the nanoparticle is modified using a compound of formula (I) in addition to a crosslinking agent. Thus, Kambe links the polymer to the inorganic particles using a linker, while the present claim includes a surface-modified inorganic nanoparticle as well as a crosslinking agent. For example, curing of the present dispersion may involve reaction of the crosslinking agent with itself or complementary groups in the polymer/oligomer (A), surface-modified nanoparticles (B), and/or in the amphiphile (C). Therefore, the crosslinking agent (D) may form intramolecular linkages between the other components in the dispersion, including the nanoparticles, which are already surface modified by reaction with a compound of formula (I). In contrast, Kambe either joins the inorganic particle directly to the polymer using a linker, without any other modifications or intermediates, or forgoes the use of a linker entirely and directly joins the polymer to the inorganic particle. The present dispersion, consequently, contains features not found in the Kambe reference and is not anticipated thereby.

Applicants respectfully request reconsideration of the claims and withdrawal of the rejection.

REJECTION UNDER 35 U.S.C. § 103

Claim 2 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. 103(a) as being unpatentable over Kambe et al. This rejection is respectfully traversed.

To establish a *prima facie* case of obviousness, three criteria must be satisfied, as set forth in MPEP §2143. Absence of any one of these criteria is sufficient to overcome an allegation of *prima facie* obviousness. One of these criteria is that the prior art reference must teach or suggest all the claim limitations. Another is that there must be motivation, in the reference or in the knowledge generally available to those of skill in the art, to modify the reference to produce the claimed invention. In the present case, Kambe fails to teach or suggest all the features of independent claim 1, namely the reference does not include the particular nanoparticles or a separate crosslinker as found in the present claims. Furthermore, Kambe in view of the general knowledge in the art provides no motivation for a skilled artisan to modify the teachings therein to include these missing features.

Claim 1 is drawn to a dispersion having a polymer/oligomer, inorganic nanoparticles with surface modifications by the compound of formula (I), an amphiphile/organic compound, and a crosslinking agent. As discussed above, Kambe only teaches inorganic particles chemically bonded to a monomer/polymer unit with or without a linker compound – Kambe does not include inorganic nanoparticles whose surface is already modified with a compound of formula (I) in addition to a separate crosslinker agent. In fact, Kambe only teaches a dispersion in context of forming the composite. The inorganic particles, polymer, and optional linker can be dispersed

and/or combined in various orders to sequentially react the three components to form the composite. Kambe dispersions at col. 18, line 64 et seq; composite formation at col. 21, line 21 et seq.

At best, Kambe teaches a dispersion that contains features that appear to have some similarity to some features of the presently claimed dispersion. However, Kambe does not teach all the features of claim 1. Moreover, the Kambe dispersion is just an intermediate to forming the Kambe composites. The composites are formed into structures by compression molding, injection molding, extrusion, and calendering, which form the composites into free structures, such as sheets or fibers. The composites can also be formed into films/coatings by spin casting, for example, such as coatings having a thickness less than 1 micron. Kambe col. 22, lines 42-55. Or, the composites can be used in batteries, photonic crystals, or electro-optical elements. Kambe col. 26, lines 55-64. Therefore, the Kambe teachings do not suggest or provide the requisite motivation to a skilled artisan to create the dispersion of present claim 1, which can be applied and cured as a curable coating film with advantageous properties. For example, the separate crosslinking agent of the present claims may be used to cure the dispersion. Particular advantages of the present dispersion include use as highly scratch-resistant, high-gloss, flexible, acid- and water-resistant, firmly adhering, antistonechip clearcoats as part of multicoat color and/or effect paint systems. Paragraph [0142].

Likewise, there is no suggestion or motivation found in Kambe to modify the inorganic particles using a compound of formula (I), i.e., $[(S\text{-})_o\text{-}L\text{-}]_mM(R)_n(H)_p$. Only the present invention as claimed includes such surface-modified inorganic nanoparticles in

a dispersion capable of producing coatings free from stress cracks and delamination at thicknesses > 30 μm. Paragraph [0053]; compare with paragraph [0015].

Accordingly, Applicants respectfully request reconsideration of the claims and withdrawal of the rejection.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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